

# EcoCart - Sustainable E-commerce Platform

## Complete Business Brief & Product Requirements Document

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### Table of Contents

- 1. [Business Overview](#)
  - 2. [Target Audience](#)
  - 3. [Website Sections & Functions](#)
  - 4. [User Flow](#)
  - 5. [Visual Identity & Design System](#)
  - 6. [Technical Implementation](#)
  - 7. [Component Specifications](#)
  - 8. [Layout Details](#)
- 

### Business Overview

EcoCart is a marketplace that connects environmentally conscious consumers with sustainable brands and products. The platform emphasizes carbon-neutral shipping, eco-friendly packaging, and transparent sustainability ratings.

**Mission Statement:** Making sustainable shopping accessible and rewarding for everyone while creating measurable positive environmental impact.

**Key Value Propositions:**

- Verified sustainability ratings for all products
  - Carbon-neutral shipping on all orders
  - Transparent environmental impact tracking
  - Curated selection of eco-friendly alternatives
  - Community-driven sustainability goals
- 

### Target Audience

**Primary Demographics**

- **Age Range:** 25-40 years old
- **Income Level:** Middle to upper-middle class consumers (\$40K-\$100K annually)
- **Location:** Urban and suburban residents in developed countries
- **Education:** College-educated with awareness of environmental issues

**Psychographics**

- Environmentally conscious millennials and Gen Z
- Values-driven purchasing decisions
- Tech-savvy online shoppers
- Interested in sustainable living and reducing carbon footprint
- Willing to pay premium for sustainable products
- Active on social media and influence others' purchasing decisions

**User Personas**

**Primary Persona: Sarah, 32, Marketing Manager**

- Lives in suburban Portland
- Household income: \$75K
- Shops online 2-3 times per week

- Reads sustainability blogs and follows eco-influencers
- Primary motivation: Reducing environmental impact without sacrificing quality

### Secondary Persona: Michael, 28, Software Developer

- Lives in urban San Francisco
  - Household income: \$95K
  - Tech enthusiast interested in sustainable innovations
  - Values transparency and data-driven sustainability metrics
  - Primary motivation: Supporting innovative eco-friendly technologies
- 

## Website Sections & Functions

### Header Navigation

- **Logo and Brand Identity**
  - EcoCart logo with leaf icon
  - Tagline: "Sustainable Shopping Made Simple"
- **Main Navigation Menu**
  - Shop (dropdown with categories)
  - Categories (Fashion, Home, Beauty, Electronics)
  - Impact (sustainability tracking and goals)
  - About (company mission and values)
- **Search Functionality**
  - Advanced search with sustainability filters
  - Auto-complete with eco-friendly suggestions
  - Filter by certifications (organic, fair trade, carbon neutral)
- **User Account Management**
  - Login/Register functionality
  - User profile and preferences
  - Sustainability dashboard
- **Shopping Cart**
  - Real-time item count
  - Quick preview on hover
  - Carbon impact summary
- **Carbon Neutral Shipping Badge**
  - Prominent display of eco-friendly shipping promise

### Homepage

#### Hero Section

- **Primary Value Proposition**
  - Compelling headline about sustainable shopping
  - Supporting copy about environmental impact
  - High-quality hero image showcasing eco-friendly lifestyle
- **Call-to-Action Buttons**
  - "Start Shopping" (primary CTA)
  - "Learn About Our Impact" (secondary CTA)
- **Trust Indicators**
  - Number of verified sustainable brands
  - Total environmental impact statistics

#### Impact Counter Section

- **Real-time Environmental Metrics**
  - Total CO<sub>2</sub> saved by community
  - Number of trees planted through purchases
  - Pounds of plastic waste reduced
  - Gallons of water conserved
- **Visual Impact Representation**
  - Animated counters
  - Progress bars toward sustainability goals
  - Infographics showing environmental benefits

#### **Featured Products Carousel**

- **Curated Product Selection**
  - Bestselling sustainable products
  - New eco-friendly arrivals
  - Seasonal sustainable alternatives
- **Product Information Display**
  - High-resolution product images
  - Sustainability score (0-100 scale)
  - Carbon footprint reduction data
  - Price and customer ratings
  - Quick "Add to Cart" functionality

#### **Category Navigation**

- **Visual Category Grid**
  - Fashion (organic cotton, recycled materials)
  - Home & Garden (solar products, sustainable furniture)
  - Beauty (cruelty-free, organic cosmetics)
  - Electronics (energy-efficient, recycled tech)
- **Category Statistics**
  - Number of products in each category
  - Average sustainability score
  - Popular items and trends

#### **Featured Brands Section**

- **Partner Brand Showcase**
  - Logos and brief descriptions of sustainable brands
  - Certification badges (B-Corp, Fair Trade, Organic)
  - Brand sustainability stories and commitments
- **New Brand Spotlights**
  - Recently added sustainable companies
  - Founder stories and mission statements

#### **Customer Testimonials**

- **Social Proof and Reviews**
  - Customer photos with purchased products
  - Impact stories from real users
  - Sustainability journey testimonials
- **Community Features**
  - User-generated content showcase

- Sustainability challenges and achievements

## Newsletter Signup

- **Email Collection**
  - Weekly sustainability tips
  - New product announcements
  - Exclusive eco-friendly deals
  - Personal impact reports

## Product Catalog

### Advanced Filtering System

- **Sustainability Filters**
  - Sustainability score range (slider)
  - Environmental certifications
  - Carbon footprint levels
  - Packaging sustainability
- **Traditional Filters**
  - Price range
  - Brand selection
  - Customer ratings
  - Availability and shipping options
- **Sort Options**
  - Highest sustainability score
  - Lowest carbon footprint
  - Customer rating
  - Price (low to high/high to low)
  - Newest arrivals

### Product Grid Display

- **Product Card Information**
  - High-quality product images with hover zoom
  - Product name and brief description
  - Sustainability badge with score
  - Carbon impact visualization
  - Price and customer ratings
  - Quick view functionality
  - Add to cart and wishlist buttons
- **Comparison Feature**
  - Side-by-side product comparison
  - Sustainability metrics comparison
  - Environmental impact analysis
  - Price and feature comparison

## Product Detail Pages

### Product Information

- **Comprehensive Product Details**
  - Multiple high-resolution images
  - 360-degree product views where applicable
  - Detailed product specifications

- Materials and manufacturing information
- **Sustainability Information**
  - Detailed environmental impact analysis
  - Life cycle assessment data
  - Carbon footprint calculator
  - Packaging sustainability details
  - End-of-life disposal instructions

#### **Environmental Certifications**

- **Certification Display**
  - Organic, Fair Trade, B-Corp badges
  - Certification verification links
  - Third-party sustainability assessments
  - Independent review scores

#### **Customer Reviews and Ratings**

- **Verified Customer Feedback**
  - Overall product ratings (5-star system)
  - Sustainability-focused review filters
  - Photo reviews and user-generated content
  - Verified purchase badges
- **Q&A Section**
  - Customer questions and answers
  - Sustainability-focused FAQ
  - Expert responses from brand representatives

#### **Related Products**

- **Sustainable Alternatives**
  - Similar products with better sustainability scores
  - Complementary eco-friendly products
  - Bundle deals for sustainable living
- **Recently Viewed Items**
  - User browsing history
  - Saved items and wishlist integration

#### **User Account Dashboard**

##### **Sustainability Tracking**

- **Personal Impact Metrics**
  - Total CO<sub>2</sub> saved through purchases
  - Water and energy conservation tracking
  - Waste reduction measurements
  - Progress toward personal sustainability goals
- **Impact Visualization**
  - Charts and graphs showing environmental progress
  - Comparison with community averages
  - Achievement badges and milestones

##### **Order Management**

- **Order History**
  - Past purchases with sustainability impact

- Reorder functionality for favorite eco-products
- Order tracking with carbon-neutral shipping updates
- **Subscription Management**
  - Recurring orders for sustainable products
  - Subscription modification and cancellation
  - Delivery schedule management

## **Personal Preferences**

- **Sustainability Preferences**
  - Preferred certifications and standards
  - Environmental priority settings
  - Product category interests
- **Account Settings**
  - Address book management
  - Payment method security
  - Privacy and communication preferences

## **Checkout Process**

### **Cart Review and Optimization**

- **Sustainability Summary**
  - Total environmental impact of cart items
  - Carbon footprint calculation
  - Sustainability score for entire order
- **Eco-Friendly Suggestions**
  - Product substitutions with better sustainability scores
  - Bundle recommendations for larger environmental impact
  - Removal of less sustainable items

### **Shipping and Packaging Options**

- **Carbon-Neutral Shipping**
  - Free carbon-neutral shipping on all orders
  - Delivery time estimates with environmental impact
  - Packaging customization options
- **Eco-Friendly Packaging**
  - Recyclable and compostable packaging options
  - Minimal packaging choices
  - Packaging return programs

## **Payment Processing**

- **Secure Payment Options**
  - Credit/debit cards with fraud protection
  - Digital wallets (PayPal, Apple Pay, Google Pay)
  - Buy now, pay later options
- **Green Payment Features**
  - Carbon offset add-ons
  - Donation options to environmental causes
  - Loyalty points for sustainable purchases

## **Order Confirmation**

- **Confirmation Details**
  - Order summary with environmental impact
  - Estimated delivery dates
  - Tracking information
- **Post-Purchase Engagement**
  - Thank you message with impact statistics
  - Social sharing of sustainability achievements
  - Suggestions for next sustainable purchases

## About and Mission Pages

### Company Story

- **Founding Mission**
  - Company origin and sustainability vision
  - Founder backgrounds and motivations
  - Timeline of company sustainability achievements
- **Values and Principles**
  - Environmental commitment statements
  - Social responsibility initiatives
  - Transparency and accountability promises

### Environmental Impact

- **Company Impact Metrics**
  - Total environmental benefits achieved
  - Carbon neutrality initiatives
  - Partnerships with environmental organizations
- **Sustainability Goals**
  - Short-term and long-term environmental targets
  - Progress tracking and public reporting
  - Community involvement in goal-setting

### Partner Brand Information

- **Brand Vetting Process**
  - Sustainability criteria for partner brands
  - Verification and auditing procedures
  - Continuous monitoring and improvement
- **Featured Brand Stories**
  - In-depth profiles of sustainable brands
  - Innovation spotlights and new technologies
  - Partnership success stories

### Educational Content

- **Sustainability Blog**
    - Educational articles about environmental topics
    - Product guides and sustainable living tips
    - Industry news and trend analysis
  - **Resource Center**
    - Downloadable guides for sustainable living
    - Carbon footprint calculators
    - Sustainability assessment tools
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## **User Flow**

### **New Customer Journey**

#### **Discovery and Exploration**

##### **1. Landing Page Entry**

- Arrive on homepage via search, social media, or advertising
- Immediate exposure to sustainability mission and values
- Browse featured sustainable products and impact metrics

##### **2. Product Discovery**

- Use search functionality to find specific eco-friendly products
- Apply sustainability filters to narrow down options
- Compare products using environmental impact metrics
- View detailed product pages with comprehensive sustainability information

##### **3. Account Creation**

- Prompted to create account during checkout process
- Set sustainability preferences and environmental goals
- Opt-in to sustainability newsletter and impact tracking

##### **4. First Purchase Experience**

- Add products to cart with real-time sustainability feedback
- Review cart with environmental impact summary
- Select carbon offset and eco-packaging options
- Complete secure checkout with sustainable payment options

##### **5. Post-Purchase Engagement**

- Receive order confirmation with environmental impact details
- Access tracking information for carbon-neutral shipping
- Receive product with sustainable packaging
- Rate products and share sustainability experience

##### **6. Ongoing Relationship**

- View personal sustainability dashboard showing environmental impact
- Receive personalized product recommendations based on preferences
- Participate in community sustainability challenges
- Continue purchasing with increased environmental awareness

### **Returning Customer Journey**

#### **Account Access and Personalization**

##### **1. Login and Dashboard**

- Access personal account with sustainability achievements
- Review progress toward environmental goals
- View personalized sustainability dashboard

##### **2. Personalized Shopping Experience**

- Browse recommendations based on previous purchases
- See products aligned with sustainability preferences
- Access saved items and wishlist management
- Utilize quick reorder functionality for favorite products

##### **3. Enhanced Features**

- Compare current purchases with past environmental impact
- Share sustainability achievements on social media
- Participate in advanced sustainability challenges



- Access exclusive content and early product launches

#### 4. Streamlined Checkout

- Quick checkout with saved preferences and payment methods
- Automatic application of sustainability preferences
- One-click reordering for subscription products
- Enhanced carbon offset and packaging options

#### 5. Community Engagement

- Participate in user forums and sustainability discussions
- Share product reviews and sustainability tips
- Invite friends and family to join the platform
- Contribute to collective environmental goals

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## Visual Identity & Design System

### Brand Personality



- **Trustworthy and Transparent:** Clean design with clear information hierarchy
- **Approachable and Inclusive:** Warm colors and friendly typography
- **Progressive and Innovative:** Modern design elements with cutting-edge features
- **Earth-conscious and Natural:** Organic shapes and earth-tone color palette

### Color Palette



#### Primary Colors

- **Primary Green:**  #059669 (Emerald-600)
  - Usage: Primary buttons, links, navigation highlights
  - Meaning: Trust, sustainability, growth, nature
  - Accessibility: AA compliant contrast ratios
- **Secondary Green:**  #10b981 (Emerald-500)
  - Usage: CTAs, highlights, interactive elements
  - Meaning: Action, progress, positive impact
  - Applications: Hover states, success messages

#### Supporting Colors



- **Accent Earth:**  #a3a3a3 (Neutral-400)
  - Usage: Supporting elements, borders, dividers
  - Meaning: Balance, reliability, natural materials
  - Applications: Form borders, subtle backgrounds
- **Background:**  #f9fafb (Gray-50)
  - Usage: Main background, card backgrounds
  - Meaning: Cleanliness, simplicity, freshness
  - Applications: Page backgrounds, content areas

#### Text Colors

- **Text Primary:**  #111827 (Gray-900)
  - Usage: Headings, important text, labels
  - Meaning: Authority, clarity, readability
  - Contrast Ratio: 16.01:1 (AAA compliant)
- **Text Secondary:**  #6b7280 (Gray-500)
  - Usage: Supporting text, captions, metadata
  - Meaning: Secondary information, subtlety

- Contrast Ratio: 4.67:1 (AA compliant)

## Status Colors

- **Success:**  #22c55e (Green-500)
  - Usage: Success messages, positive actions
  - Applications: Order confirmations, achievements
- **Warning:**  #f59e0b (Amber-500)
  - Usage: Carbon impact alerts, important notices
  - Applications: Impact warnings, attention messages

## Typography System

### Font Selection

- **Primary Font Family:** Inter (Google Fonts)
  - Rationale: Clean, modern, highly legible
  - Characteristics: Neutral, professional, sustainable feel
  - Supports multiple languages and weights

### Typography Scale

- **Heading 1:** Inter 600 (Semi-bold) - 32px
  - Usage: Page titles, hero headlines
  - Line Height: 1.2
  - Letter Spacing: -0.02em
- **Heading 2:** Inter 600 (Semi-bold) - 24px
  - Usage: Section headings, card titles
  - Line Height: 1.3
  - Letter Spacing: -0.01em
- **Heading 3:** Inter 600 (Semi-bold) - 20px
  - Usage: Subsection headings, product names
  - Line Height: 1.4
  - Letter Spacing: Normal
- **Heading 4:** Inter 600 (Semi-bold) - 18px
  - Usage: Card headings, form labels
  - Line Height: 1.4
  - Letter Spacing: Normal
- **Body Text:** Inter 400 (Regular) - 16px
  - Usage: Main content, descriptions
  - Line Height: 1.6
  - Letter Spacing: Normal
- **Caption:** Inter 400 (Regular) - 14px
  - Usage: Small text, metadata, labels
  - Line Height: 1.5
  - Letter Spacing: Normal
- **Button Text:** Inter 500 (Medium) - 14px
  - Usage: Button labels, interactive elements
  - Line Height: 1.4
  - Letter Spacing: 0.01em

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## Technical Implementation

## Framework and Architecture

- **Frontend Framework:** React 18 with functional components
- **Styling:** Tailwind CSS with custom configuration
- **Component Library:** shadcn/ui for accessible, consistent components
- **State Management:** React hooks (useState, useContext, useReducer)
- **Routing:** React Router for single-page application navigation
- **Build System:** Single HTML file with embedded CSS and JavaScript

## Component Design System

### Design Tokens

```
css

/* Spacing Scale */
--spacing-xs: 4px;
--spacing-sm: 8px;
--spacing-md: 16px;
--spacing-lg: 24px;
--spacing-xl: 32px;
--spacing-2xl: 48px;
--spacing-3xl: 64px;

/* Border Radius */
--radius-sm: 4px;
--radius-md: 8px;
--radius-lg: 12px;
--radius-xl: 16px;

/* Shadow System */
--shadow-sm: 0 1px 2px 0 rgb(0 0 0 / 0.05);
--shadow-md: 0 4px 6px -1px rgb(0 0 0 / 0.1);
--shadow-lg: 0 10px 15px -3px rgb(0 0 0 / 0.1);
```

### Animation System

```
css

/* Transition Timing */
--transition-fast: 150ms cubic-bezier(0.4, 0, 0.2, 1);
--transition-normal: 300ms cubic-bezier(0.4, 0, 0.2, 1);
--transition-slow: 500ms cubic-bezier(0.4, 0, 0.2, 1);

/* Animation Curves */
--ease-in-out: cubic-bezier(0.4, 0, 0.2, 1);
--ease-out: cubic-bezier(0, 0, 0.2, 1);
--ease-in: cubic-bezier(0.4, 0, 1, 1);
```

## Responsive Design Strategy

### Breakpoint System

- **Mobile:** 320px - 768px (sm)
  - Single column layouts
  - Simplified navigation
  - Touch-optimized interactions
  - Reduced content density
- **Tablet:** 768px - 1024px (md)
  - Two-column layouts
  - Expanded navigation
  - Medium content density

- Hybrid touch/mouse interactions
  - **Desktop:** 1024px - 1280px (lg)
    - Multi-column layouts
    - Full navigation with dropdowns
    - High content density
    - Mouse-optimized interactions
  - **Large Desktop:** 1280px+ (xl)
    - Maximum layout width with centering
    - Enhanced content presentation
    - Advanced interactive features
- 

## Component Specifications

### Header Component

#### Layout Structure

Fixed Header Container

└─ Max Width: 7xl (1280px)

└─ Height: 64px (h-16)

└─ Background: White with border-bottom

└─ Padding: px-4 sm:px-6 lg:px-8

└─ Z-index: 50 (sticky positioning)

#### Component Elements

- **Logo Section**
  - Height: 32px (h-8)
  - Auto width with proper aspect ratio
  - Margin right: 32px (mr-8)
  - Icon + text combination
- **Navigation Menu (Desktop)**
  - Hidden on mobile (hidden md:flex)
  - Horizontal spacing: 32px between items (space-x-8)
  - Font weight: Medium (font-medium)
  - Hover effect: Color change to emerald-600
- **Search Bar (Desktop)**
  - Width: 384px (w-96) on desktop
  - Expandable on mobile
  - Placeholder: "Search sustainable products..."
  - Icon: Search icon positioned absolutely
- **User Actions Section**
  - Carbon Neutral Badge: bg-emerald-100 text-emerald-800
  - User Account: 40x40px rounded-full (w-10 h-10)
  - Shopping Cart: Relative positioning with badge
  - Badge: bg-emerald-500 text-white rounded-full

#### Mobile Considerations

- **Hamburger Menu**
  - 32x32px touch target (p-2)
  - Toggle animation between bars and X
  - Slide-in navigation from left

- **Mobile Navigation**
  - Full-width overlay
  - Fixed positioning
  - Background: White with shadow
  - Transform: translateX animation

## Hero Section

### Layout Structure

Hero Container

- └─ Height: 384px (h-96)
- └─ Background: Gradient from emerald-50 to green-50
- └─ Padding: py-20 (80px vertical)
- └─ Text Alignment: Center

### Content Elements

- **Main Headline**
  - Font size: text-4xl md:text-5xl (32px/48px)
  - Font weight: font-semibold (600)
  - Margin bottom: 24px (mb-6)
  - Color: text-gray-900
- **Supporting Text**
  - Font size: text-xl (20px)
  - Color: text-gray-600
  - Margin bottom: 32px (mb-8)
  - Max width: 512px (max-w-2xl)
- **Call-to-Action Buttons**
  - Primary: bg-emerald-600 hover:bg-emerald-700
  - Padding: px-8 py-3 (32px horizontal, 12px vertical)
  - Border radius: rounded-lg (8px)
  - Secondary: Transparent with emerald text

## Product Card Component

### Layout Structure

Product Card Container

- └─ Background: White
- └─ Border Radius: rounded-lg (8px)
- └─ Shadow: shadow-sm with hover:shadow-md
- └─ Overflow: hidden
- └─ Transition: all 300ms cubic-bezier

### Image Section

- **Aspect Ratio:** 4:3 (aspect-[4/3])
- **Height:** 192px (h-48)
- **Object Fit:** cover
- **Position:** relative for badge positioning

### Badge System

- **Sustainability Badge**
  - Position: absolute top-2 right-2
  - Background: Linear gradient emerald-500 to emerald-600

- Text: White, 12px (text-xs)
- Padding: px-2 py-1
- Border radius: rounded (4px)
- **Carbon Savings Badge**
  - Position: absolute top-2 left-2
  - Background: bg-green-100 text-green-800
  - Format: "X.X kg CO<sub>2</sub> saved"

## Content Section

- **Padding:** 16px all sides (p-4)
- **Product Name:** font-medium text-gray-900 mb-2
- **Rating System:** Flex layout with stars and count
- **Price Display:** text-lg font-semibold text-gray-900
- **Add to Cart Button:** Full width, emerald background

## Impact Counter Section

### Layout Structure

Impact Container

- Background: bg-emerald-50
- Padding: py-16 (64px vertical)
- Margin: -mt-8 (overlap with hero)
- Position: relative z-10

## Grid System

- **Desktop:** grid-cols-3 (three columns)
- **Tablet:** grid-cols-3 (maintained)
- **Mobile:** grid-cols-1 (single column)
- **Gap:** gap-8 (32px between cards)

## Counter Cards

- **Background:** White
- **Border Radius:** rounded-lg (8px)
- **Shadow:** shadow-sm
- **Padding:** p-8 (32px all sides)
- **Text Alignment:** Center
- **Animation:** Fade-in with translate-y

## Newsletter Section

### Layout Structure

Newsletter Container

- Background: bg-emerald-600
- Padding: py-16 (64px vertical)
- Text Color: White
- Text Alignment: Center

## Form Elements

- **Container:** max-w-md mx-auto
- **Input Field:** flex-1 px-4 py-3 rounded-lg
- **Submit Button:** bg-white text-emerald-600 px-6 py-3
- **Success State:** bg-emerald-500 with check icon

## Layout Details

### Homepage Layout Specifications

#### Vertical Rhythm

Page Structure:

- Header: 64px fixed
- Hero Section: 384px
- Impact Counter: -32px overlap + 128px content
- Featured Products: 64px margin-top + content
- Categories: 64px margin-top + content
- Newsletter: 64px margin-top + content
- Footer: Content height

#### Content Containers

- Max Width:** max-w-7xl (1280px)
- Centering:** mx-auto
- Horizontal Padding:** px-4 sm:px-6 lg:px-8

#### Grid Systems

- Product Grid:** grid-cols-1 md:grid-cols-2 lg:grid-cols-4
- Category Grid:** grid-cols-2 md:grid-cols-4
- Impact Grid:** grid-cols-1 md:grid-cols-3

### Product Page Layout

#### Two-Column Layout

Product Page Structure:

- Breadcrumbs: 16px margin-top
- Product Grid: 32px margin-top
  - Images: grid-cols-1 lg:grid-cols-2
  - Info: grid-cols-1 lg:grid-cols-2
- Sustainability Info: 24px margin-top
- Reviews: 32px margin-top

#### Image Gallery

- Main Image:** aspect-square max-w-lg
- Thumbnail Strip:** Horizontal scroll on mobile
- Zoom Functionality:** Click to enlarge

#### Product Information

- Max Width:** max-w-md
- Vertical Spacing:** space-y-6
- Typography Hierarchy:** h1, h2, h3 for sections

### Responsive Behavior

#### Mobile (< 768px)

- Navigation:** Hamburger menu
- Hero Text:** Reduced font sizes
- Product Grid:** Single column
- Search:** Full-width overlay
- Cards:** Increased touch targets

#### Tablet (768px - 1024px)

- **Navigation:** Full desktop navigation
- **Product Grid:** Two columns
- **Sidebar:** Collapsible on demand
- **Mixed Interactions:** Touch and mouse support

#### Desktop (> 1024px)

- **Full Layout:** All features visible
- **Hover States:** Enhanced interactions
- **Advanced Features:** Comparison tools, filters
- **Optimized Performance:** Larger images, more content

### Accessibility Considerations

#### WCAG 2.1 AA Compliance

- **Color Contrast:** Minimum 4.5:1 for normal text
- **Focus Indicators:** Visible and consistent
- **Keyboard Navigation:** Full site accessibility
- **Screen Readers:** Semantic HTML structure
- **Alternative Text:** All images and icons
- **Form Labels:** Proper association and instructions

#### Inclusive Design Features

- **Scalable Text:** Up to 200% without horizontal scrolling
- **High Contrast Mode:** Support for system preferences
- **Reduced Motion:** Respect for animation preferences
- **Multiple Input Methods:** Mouse, keyboard, touch support

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## Performance Optimization

#### Loading Strategy

- **Critical CSS:** Inline for above-the-fold content
- **Image Optimization:** WebP format with fallbacks
- **Lazy Loading:** Images and non-critical components
- **Code Splitting:** React.lazy() for route-based splitting

#### Caching Strategy

- **Static Assets:** Long-term caching with versioning
- **API Responses:** Appropriate cache headers
- **Service Worker:** Offline functionality for key pages
- **CDN Integration:** Global content delivery

#### Monitoring and Analytics

- **Core Web Vitals:** LCP, FID, CLS optimization
- **Performance Budgets:** Size and timing limits
- **Real User Monitoring:** Actual performance data
- **A/B Testing:** Feature and design optimization

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This comprehensive document provides all necessary information for designing and developing the EcoCart sustainable e-commerce platform, ensuring consistency between the business requirements and technical implementation while maintaining focus on environmental impact and user experience.